

Residential System Sizing Calculation

Summary

Project Title:
Scheffler Residence

Lake City, FL 32055

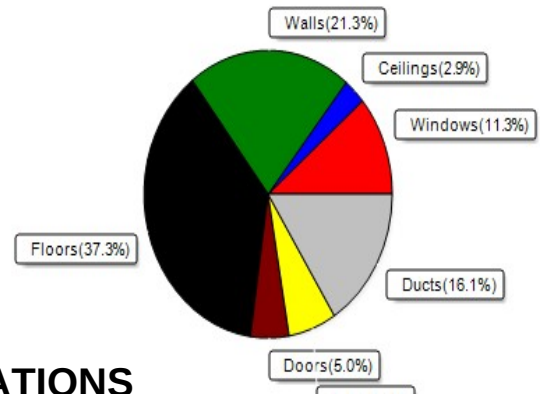
5/19/2021

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)			
Winter design temperature(TMY3 99%)	30 F	Summer design temperature(TMY3 99%)	94 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	40 F	Summer temperature difference	19 F
Total heating load calculation	32392 Btuh	Total cooling load calculation	24112 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	129.7 42000	Sensible (SHR = 0.85)	175.0 35700
Heat Pump + Auxiliary(0.0kW)	129.7 42000	Latent	169.9 6300
		Total (Electric Heat Pump)	174.2 42000

WINTER CALCULATIONS

Winter Heating Load (for 2168 sqft)

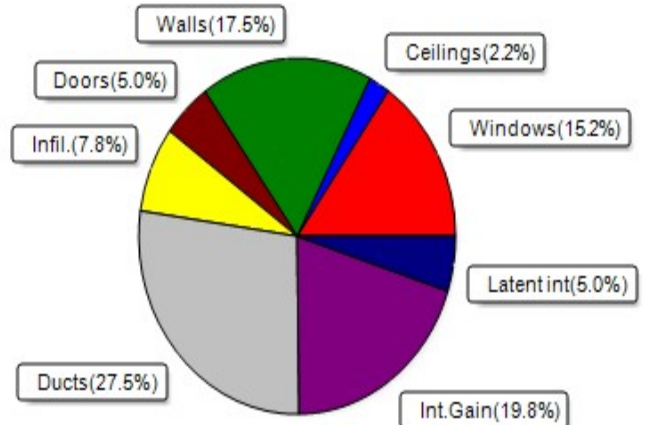
Load component		Load	
Window total	276 sqft	3647	Btuh
Wall total	2002 sqft	6904	Btuh
Door total	88 sqft	1619	Btuh
Ceiling total	2168 sqft	954	Btuh
Floor total	2168 sqft	12083	Btuh
Infiltration	45 cfm	1984	Btuh
Duct loss		5201	Btuh
Subtotal		32392	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		32392	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2168 sqft)

Load component		Load	
Window total	276 sqft	3674	Btuh
Wall total	2002 sqft	4217	Btuh
Door total	88 sqft	1214	Btuh
Ceiling total	2168 sqft	520	Btuh
Floor total		0	Btuh
Infiltration	34 cfm	707	Btuh
Internal gain		4780	Btuh
Duct gain		5292	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		20405	Btuh
Latent gain(ducts)		1334	Btuh
Latent gain(infiltration)		1173	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3707	Btuh
TOTAL HEAT GAIN		24112	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 5-19-21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Scheffler Residence

Lake City, FL 32055

5/19/2021

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

Component Loads for Whole House

Window	Type*					Overhang		Window Area(sqft)			HTM		Load		
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded			
1	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	15.0	0.0	15.0	11	11	163	Btuh	
2	2 NFRC	0.22, 0.33	No	No	N	11.5f	1.3ft	30.0	0.0	30.0	11	11	327	Btuh	
3	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	36.0	0.0	36.0	11	11	392	Btuh	
4	2 NFRC	0.22, 0.33	No	No	W	1.5ft	1.3ft	15.0	0.0	15.0	11	27	412	Btuh	
5	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	30.0	0.0	30.0	11	11	327	Btuh	
6	2 NFRC	0.22, 0.33	No	No	N	1.5ft	1.3ft	10.0	0.0	10.0	11	11	109	Btuh	
7	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	12.0	0.0	12.0	11	27	330	Btuh	
8	2 NFRC	0.22, 0.33	No	No	E	1.5ft	1.3ft	3.0	0.0	3.0	11	27	82	Btuh	
9	2 NFRC	0.22, 0.33	No	No	S	1.5ft	1.3ft	6.0	6.0	0.0	11	13	65	Btuh	
10	2 NFRC	0.22, 0.33	No	No	S	7.5ft	1.3ft	18.0	18.0	0.0	11	13	196	Btuh	
11	2 NFRC	0.22, 0.33	No	No	S	7.5ft	1.3ft	18.0	18.0	0.0	11	13	196	Btuh	
12	2 NFRC	0.22, 0.33	No	No	S	11.8f	1.3ft	16.0	16.0	0.0	11	13	174	Btuh	
13	2 NFRC	0.22, 0.33	No	No	S	1.5ft	1.3ft	15.0	15.0	0.0	11	13	163	Btuh	
14	2 NFRC	0.22, 0.33	No	No	W	1.5ft	1.3ft	10.0	0.0	10.0	11	27	275	Btuh	
15	2 NFRC	0.22, 0.33	No	No	N	11.5f	1.3ft	26.0	0.0	26.0	11	11	283	Btuh	
16	2 NFRC	0.22, 0.33	No	No	S	11.8f	1.3ft	16.3	16.3	0.0	11	13	177	Btuh	
	Window Total								276 (sqft)					3674 Btuh	
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
1	Frame - Wood - Ext					0.09	13.0/0.6	99.0			2.2		218 Btuh		
2	Frame - Wood - Ext					0.09	13.0/0.6	115.5			2.2		254 Btuh		
3	Frame - Wood - Ext					0.09	13.0/0.6	84.0			2.2		185 Btuh		
4	Frame - Wood - Ext					0.09	13.0/0.6	100.0			2.2		220 Btuh		
5	Frame - Wood - Ext					0.09	13.0/0.6	77.3			2.2		170 Btuh		
6	Frame - Wood - Ext					0.09	13.0/0.6	58.5			2.2		129 Btuh		
7	Frame - Wood - Ext					0.09	13.0/0.6	176.0			2.2		387 Btuh		
8	Frame - Wood - Ext					0.09	13.0/0.6	247.5			2.2		544 Btuh		
9	Frame - Wood - Ext					0.09	13.0/0.6	66.0			2.2		145 Btuh		
10	Frame - Wood - Ext					0.09	13.0/0.6	23.3			2.2		51 Btuh		
11	Frame - Wood - Ext					0.09	13.0/0.6	105.7			2.2		232 Btuh		
12	Frame - Wood - Ext					0.09	13.0/0.6	23.3			2.2		51 Btuh		
13	Frame - Wood - Ext					0.09	13.0/0.6	15.4			2.2		34 Btuh		
14	Frame - Wood - Ext					0.09	13.0/0.6	21.0			2.2		46 Btuh		
15	Frame - Wood - Ext					0.09	13.0/0.6	99.0			2.2		218 Btuh		
16	Frame - Wood - Ext					0.09	13.0/0.6	362.0			2.2		796 Btuh		
17	Frame - Wood - Adj					0.09	13.0/0.6	328.5			1.6		538 Btuh		
	Wall Total								2002 (sqft)					4217 Btuh	
Doors	Type					Area (sqft)			HTM		Load				
1	Insulated - Exterior					40.0			13.8		552 Btuh				
2	Insulated - Exterior					24.0			13.8		331 Btuh				
3	Insulated - Garage					24.0			13.8		331 Btuh				
	Door Total								88 (sqft)					1214 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
1	Cath/Sngl Assem/Light/Shingle					0.011	45.0/45.0	2168.0			0.24		520 Btuh		
	Ceiling Total								2168 (sqft)					520 Btuh	
Floors	Type					R-Value		Size			HTM		Load		
1	Slab On Grade					0.0		2168 (ft-perimeter)			0.0		0 Btuh		
	Floor Total							2168.0 (sqft)					0 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Scheffler Residence

Lake City, FL 32055

5/19/2021

	Envelope Subtotal:					9625 Btuh
Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.12	17344	1	34.0	707 Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load
		6	X 230	+	3400	4780 Btuh
	Sensible Envelope Load:					15112 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.350)					5292 Btuh
	Sensible Load All Zones					20405 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Scheffler Residence

Lake City, FL 32055

5/19/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15112 Btuh
	Sensible Duct Load	5292 Btuh
	Total Sensible Zone Loads	20405 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	20405 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1173 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1334 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3707 Btuh
	TOTAL GAIN	24112 Btuh

EQUIPMENT

1. Central Unit	#	42000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)
(SHGC - Shading coefficient of glass as SHGC numerical value)
(U - Window U-Factor)
(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))
- For Blinds: Assume medium color, half closed
For Draperies: Assume medium weave, half closed
For Roller shades: Assume translucent, half closed
(IS - Insect screen: none(N), Full(F) or Half(½))
(Ornt - compass orientation)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Lake City, FL 32055

Project Title:
Scheffler Residence
Building Type: User

5/19/2021

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.33	N	15.0		13.2	198 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	30.0		13.2	396 Btuh
3	2, NFRC 0.22	Vinyl	0.33	N	36.0		13.2	475 Btuh
4	2, NFRC 0.22	Vinyl	0.33	W	15.0		13.2	198 Btuh
5	2, NFRC 0.22	Vinyl	0.33	N	30.0		13.2	396 Btuh
6	2, NFRC 0.22	Vinyl	0.33	N	10.0		13.2	132 Btuh
7	2, NFRC 0.22	Vinyl	0.33	E	12.0		13.2	158 Btuh
8	2, NFRC 0.22	Vinyl	0.33	E	3.0		13.2	40 Btuh
9	2, NFRC 0.22	Vinyl	0.33	S	6.0		13.2	79 Btuh
10	2, NFRC 0.22	Vinyl	0.33	S	18.0		13.2	238 Btuh
11	2, NFRC 0.22	Vinyl	0.33	S	18.0		13.2	238 Btuh
12	2, NFRC 0.22	Vinyl	0.33	S	16.0		13.2	211 Btuh
13	2, NFRC 0.22	Vinyl	0.33	S	15.0		13.2	198 Btuh
14	2, NFRC 0.22	Vinyl	0.33	W	10.0		13.2	132 Btuh
15	2, NFRC 0.22	Vinyl	0.33	N	26.0		13.2	343 Btuh
16	2, NFRC 0.22	Vinyl	0.33	S	16.3		13.2	215 Btuh
Window Total					276.3(sqft)			3647 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	99		3.45	341 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	116		3.45	398 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	84		3.45	290 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	100		3.45	345 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	77		3.45	267 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	59		3.45	202 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	176		3.45	607 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	248		3.45	853 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	66		3.45	228 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	23		3.45	80 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	106		3.45	364 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	23		3.45	80 Btuh
13	Frame - Wood	- Ext	(0.086)	13.0/0.6	15		3.45	53 Btuh
14	Frame - Wood	- Ext	(0.086)	13.0/0.6	21		3.45	72 Btuh
15	Frame - Wood	- Ext	(0.086)	13.0/0.6	99		3.45	341 Btuh
16	Frame - Wood	- Ext	(0.086)	13.0/0.6	362		3.45	1248 Btuh
17	Frame - Wood	- Adj	(0.086)	13.0/0.6	329		3.45	1133 Btuh
Wall Total					2002(sqft)			6904 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		40		18.4	736 Btuh
2	Insulated - Exterior, n		(0.460)		24		18.4	442 Btuh
3	Insulated - Garage, n		(0.460)		24		18.4	442 Btuh
Door Total					88(sqft)			1619Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL 32055

Project Title:
Scheffler Residence
Building Type: User

5/19/2021

Ceilings 1	Type/Color/Surface Cathedral/L/Shing Ceiling Total	Ueff. (0.011)	R-Value 45.0/45.0	Area X 2168 2168(sqft)	HTM= 0.4	Load 954 Btuh 954Btuh
Floors 1	Type Slab On Grade Floor Total	Ueff. (1.180)	R-Value 0.0	Size X 256.0 ft(perim.) 2168 sqft	HTM= 47.2	Load 12083 Btuh 12083 Btuh
Envelope Subtotal:						25207 Btuh
Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 17344	Wall Ratio 1.00	CFM= 45.3	1984 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.191)					5201 Btuh
All Zones	Sensible Subtotal All Zones					32392 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	32392 Btuh 0 Btuh 32392 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
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Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)



Version 8